



Statewide Activity Approval (SAA) for Shoreline Stabilization Projects in Tidal and Non-tidal Waters of the State of Delaware

Activities Definitions

For tidal systems, the term “**Living Shoreline**” represents a number of treatments and techniques that:

- Offer resilience to shorelines from acute wave and/or surge energies, chronic tidal and wake energies, and/or rises in sea level;
- Utilize predominantly natural materials and/or processes exclusively or in combination with a structural (hybrid) component; and
- Sustain, enhance, and/or restore ecological functions and connections between uplands and aquatic areas.

In general, living shoreline treatments or techniques do not include standalone shoreline rip-rap, bulkheads, groins, sills, jetties, artificial reefs, wave breaks, and/or pure beach nourishment projects, where an ecological function focus is typically absent or limited

Living shorelines can be segregated into three categories: Conventional; Energy Dissipating; and Armored.

A “**Conventional Living Shoreline**” consists of treatments and techniques consisting entirely of naturally based treatments.

- These naturally based treatments can include, but are not limited to: living biomass (e.g., vegetation and shellfish), dead biomass (e.g., coir fiber materials, logs, natural organic debris and litter), and natural earthen material (clays, silts, sands, shell, and similar up to gravel-sized grain size) acquired from or are representative of that naturally occurring at or near the site.
- Conventional Living Shorelines typically are constructed in low energy systems.
- The most commonly examples of conventional methods include: coir fiber logs and oyster shell bags.

An “**Energy Dissipating Living Shoreline**” consists of treatments and techniques that may be used for Conventional Living Shorelines, but will also have the addition of structural features prepared and deployed in a pattern that:

- Functions predominantly to attenuate energy and ideally provide for measureable accretion or sediment accumulation;
- Has the documented ability to provide aquatic habitat improvement on, within, and/or nearby the structure itself; and
- Allows for the passage of macro aquatic organisms in and throughout its deployment area (predominantly linear deployments of structure with occasional gaps or deployment breaks do not generally meet this criterion).

Energy Dissipating Living Shorelines are typically constructed in moderate to high energy systems, and at sites where passive accretion is desired.

An “**Armored Living Shoreline**” consists of treatments and techniques used for Conventional Living Shorelines, *plus* the addition of hard structural (such as marsh-toe revetments and sills). Marsh Toe Revetment consist of a line of free standing rock constructed in front of an existing functioning marsh, while a marsh toe sill consists of a line of free standing rock (sill) placed just offshore of an eroding shoreline with sandy fill placed between the sill and the eroding bank upon which marsh grasses are planted to create a protective marsh fringe.

Armored Living Shorelines are constructed and deployed in a pattern that:

- Functions predominantly to diffract and/or deflect energy through the creation of a continuous or near continuous structural deployment (e.g., marsh-toe revetments and sills). ;
- Has lower ability to provide aquatic habitat improvements on and within the structure itself, but may provide aquatic habitat improvements in other indirect ways (e.g., lower energy zones, current edges, topographic variations); and
- Allows for the passage of macro aquatic organisms at specified gaps or deployment breaks.

Armored Living Shorelines are typically constructed in moderate to high energy systems.

Coordinating Agencies

- All project applications received for this SAA shall be coordinated with the DNREC Wildlife Species Conservation and Research Program (WSCR) to insure that the activities will not adversely impact any threatened or endangered plant or animal species, and with the DNREC Fisheries Section to determine how best to avoid and/or minimize adverse impacts to fish and fish habitat. For planning purposes, the applicant may go to the WSCR website

<http://www.dnrec.delaware.gov/fw/NHESP/services/Pages/EnvReviewRequests.aspx> to view information on obtaining an environmental review in advance of submitting an application. Alternatively, the review will be conducted as part of processing the application.

- If any material used involves shellfish whether dead or alive (i.e. shell, spat, etc.) then the Delaware Shellfish Program shall be contacted at (302) 739-9939 to discuss the project location and specific techniques in which the shellfish will be used.

Authorized Activity

This Statewide Activity Approval (SAA) may be used to construct the following types of shoreline stabilization projects, not to exceed 500 linear feet along the shoreline or bank, in subaqueous lands jurisdictional under 7 Del. C., Chapter 72, The Subaqueous Lands Act, within the State of Delaware.

- **Conventional Living Shoreline** (e.g. Natural Fiber Logs)
- **Energy Dissipating Living Shoreline** (e.g. Oyster castles, wave attenuation devices, log attenuation structures)
- **Armored Living Shoreline** (e.g. Marsh Toe Revetment with a Natural Marsh and Marsh Toe Sills with a Planted Marsh)

All projects must meet the following applicable criteria identified below, and must comply with all Permit Conditions, in order to use this SAA. Projects which cannot comply with the Criteria or Permit Conditions will require an individual Subaqueous Lands Lease, Permit, or Letter of Authorization and must go through the appropriate procedure for that authorization type.

Effective Date: November 1, 2015

Expiration Date: October 31, 2020

Authorizing Authority

This SAA has been adopted pursuant to the provisions of 7 Del. C., 7203, and the Department's Regulations Governing the Use of Subaqueous Lands § 2.5 "Statewide Activity Approvals", as administered by the Delaware Department of Natural Resources and Environmental Control, Division of Water Resources, Wetlands and Subaqueous Lands Section (WSLS).

The recipient of this SAA, hereto referred to as the permittee, is authorized to perform the above referenced work in accordance with the terms and conditions specified below.

Exclusions

Except as otherwise specified herein, this SAA shall not be used to authorize work in the following circumstances:

- a. where a project-specific State Wetlands Permit is required pursuant to 7 Del. C., Chapter 66 for activities in State-regulated tidal wetlands;
- b. where a project-specific 401 Water Quality Certification (from the WSLS) or a project-specific Coastal Zone Consistency Determination (from DNREC's Coastal Management Program) is required as a result of federal agency involvement in the project, federal funding of the project, or the need to obtain certain federal permits for the project.
- c. where the activity is located in any waterway which is identified by the Department as having contaminated sediments, and where the proposed work will likely mobilize those contaminants;
- d. where the project will adversely affect any State or federally listed threatened or endangered species as determined by the Department's Wildlife Species Conservation and Research Program and the U.S. Fish and Wildlife Service;
- e. where the activity is located in a component of the National Wild and Scenic River system (e.g. The White Clay Creek Watershed), unless specific coordination with, and approval from, the National Park Service has been obtained.
- f. where minimal demonstrable shoreline or bank erosion is evident, as determined by the Department.
- g. where fill or structures are proposed to be installed channelward of the Mean Low Water Line.

The work authorized under this SAA shall comply with the following conditions described below:

Project Specific SAA Conditions

Conventional Living Shorelines

1. Fiber logs shall be made of coconut fiber or other natural fiber approved by the Department.
2. Timber logs that are used shall not be harvested for the expressed purpose of shoreline protection rather should be the re-use of timber harvested for forest health or safety.
3. Fiber rolls and/or timber logs shall be installed so that they rest against the bottom of the waterway in ponds or lakes

4. Plants should be plugged in an alternating pattern along the top of the fiber log in gaps between the coir fiber netting (after the logs have had adequate time to become naturally saturated and have begun to trap fine grained deposits). Appropriate species and a spacing ranging from 6 to 12 inches should be selected by a plant specialist according to site characteristics such as soil properties, anticipated post-construction bank slope, water chemistry, amount of available sunlight, and expected duration of inundation during high tides and/or high flow events. If water levels are too low for the fiber logs to be submerged $\frac{1}{2}$ to $\frac{2}{3}$ of their diameter, plants should be plugged inside the soil/log interface where they will receive adequate moisture.
5. Wooden stakes shall be used to anchor the fiber logs in place. Stakes should be notched approximately 5 inches (13 centimeters) from their tops and pounded partially into the ground on either side of the bundle at a spacing of 3 to 4 feet. Twine should be tied from the notch in one stake to the notch in the stake directly opposite. The stakes should then be driven so that the twine is secured against the top of the roll. Ideally, the top of the stake should be flush with the top of the roll.
6. The ends of adjacent fiber logs should be laced together with twine by making a number of passes in the end netting between the logs and pulling the twine taut. Where a fiber roll does not abut another fiber roll, the end should be bent inward and buried in the bank to prevent water from intruding behind the roll and dislodging it.
7. Timber logs shall be anchored or secured to the bottom through a combination of anchor cables, depression of the log into the substrate, and/or staking the timber. An appropriate justification and cross-sectional diagram of the selected anchoring method will be necessary for approval.
8. Shell bags will be constructed of material deemed sufficient and approved by the department.
9. All shell material used in bags or as substrate for a Conventional Living Shoreline shall be aged on land for no less than one year.
10. Additionally, to ensure that roots extend into the soil, plants shall be plugged into the sides of the fiber log near the soil. Soil backfill placed (during construction) or naturally that naturally accumulates behind the fiber logs (post construction) shall be seeded and/or plugged with appropriate native vegetative species and covered with an erosion control blanket to prevent slope erosion (within an acceptable time period post construction, as set forth by the State).

Energy Dissipating Living Shoreline

1. The appropriateness of applying energy attenuation structures or devices at a proposed site will be determined, based upon the past performance data and implemented projects, at the discretion of the State.

Armored Living Shoreline

1. Marsh toe revetments should be offset from the existing marsh edge near the mean low water elevation. Leave the non-vegetated zone between the marsh edge and mean low water uncovered.
2. Filter cloth shall be installed behind or beneath the rip-rap structure (either in a revetment or a sill) to contain sediments and prevent erosion from occurring behind the structure.
3. No rock or structural material shall be placed in vegetated wetlands.
4. The height of the rock sill shall be no more than 1/2 to 1 foot above the mean high water elevation to allow regular wave overtopping and access for marine organisms.
5. The slope of the front and back of the rock sill shall not exceed 1.5 (horizontal) to 1 (vertical).
6. Marsh toe sills and revetments shall be designed so that they follow the natural contour of the shoreline or the pre-existing (prior to shoreline erosion) contour.
7. Tidal gaps or openings shall be incorporated in the sill structure a maximum distance of 40 feet apart, with a tidal gap opening of a width that reflects the needs and settings of the design (3 to 6 feet).
8. Construction mats shall be used to cross through adjacent marsh, all material stockpiles and equipment storage should be in the upland area.
9. The rock and soil material used for the marsh toe sill shall not exceed an average of one cubic yard per running foot placed along the bank below the plane of the high tide line.
10. Rock sills shall be constructed prior to placement of the sandy fill material.
11. There shall be no excavation channelward of the permitted alignment either before, during or after the installation of a rock sill or revetment.

12. Fill and plantings behind (landward) of rock toe sills shall be comprised of a wetland vegetative component that is at least twice the area of the footprint of the sill.
13. Only clean coarse-grained sand fill should be used when placing fill behind (landward) the sill. No soil amendments are necessary.
14. No rock or fill shall be placed in vegetated wetlands.
15. Fill material placed for planting in combination with a rock sill shall be allowed to settle for 1-2 weeks before planting the filled area. Tide levels within the planting area should be verified and adjustments to the slope and height of the fill should be done prior to planting.
16. Herbaceous marsh plantings (e.g. *Spartina* sp.) shall be planted on a minimum of 12 inch to 24 inches on center or based upon the specifications set forth from the provider of the herbaceous marsh plantings (documentation required). Clumped configurations may also be used for planting marsh vegetation.

General SAA Conditions

1. The work authorized herein shall be completed in accordance with the terms and conditions of the applicable Department of the Army Permit.
2. This SAA is granted for the purposes stated herein. Any other use without prior approval shall constitute reason for this SAA being revoked.
3. The approved structure(s) shall not be constructed channelward of the permittee's water-side property boundary without written permission from the underwater land owner.
4. Erosion and sediment control measures shall be implemented in accordance with the specifications and criteria in the current Delaware Erosion and Sediment Control Handbook so as to minimize entry and dispersal of sediment and other contaminants in surface waters.
5. There shall be no movement of equipment within State-regulated wetlands or subaqueous lands not specifically authorized by this SAA. Any equipment traversing wetlands or subaqueous lands, as may be authorized by this SAA, shall be supported on mats. Any areas disturbed as a direct or indirect result of the activities authorized by this SAA shall be returned to pre-construction conditions and elevations, and appropriately stabilized.
6. All work should be planned for periods of low waterway base flows. In the event that sediment and erosion controls are damaged or destroyed due to storm events, such controls shall be repaired and/or replaced immediately.

7. The stumps of any trees removed along the shoreline or bank during construction of this project shall not be removed unless indicated on the approved plans.
8. Erosion control and/or soil stabilization matting used for this project shall be free of any plastic or other non-degradable materials. Erosion control and/or soil stabilization matting shall be comprised of natural degradable materials such as coir or jute.
9. Only native plants listed in the current “Delaware Native Plants for Landscaping and Restoration” or a native plant seed mix, approvable by this office, shall be used to stabilize the area following construction.
10. The permittee and contractor shall at all times comply with all applicable laws and regulations of the Department of Natural Resources and Environmental Control.
11. The activities authorized herein shall be undertaken in accordance with the permit conditions, the final stamped and approved plans, and with the information provided in the permit application.
12. A copy of this SAA and the stamped approved plans shall be available on-site during all phases of construction activity.
13. The conditions contained herein shall be incorporated into any and all construction contracts associated with the construction authorized herein. The permittee and contractor are responsible to ensure that the workers executing the activities authorized by this SAA have full knowledge of, and abide by, the terms and conditions of this SAA.
14. The permittee shall protect and hold the State of Delaware harmless from any loss, cost or damage resulting from the activities authorized herein.
15. The issuance of this SAA does not constitute approval for any activities that may be required by any other local, state or federal government agency.
16. The issuance of this SAA does not imply approval of any other part, phase, or portion of any overall project the permittee may be contemplating.
17. This SAA authorizes only the activities described herein. Modifications to the project may require a supplemental approval from this office prior to the initiation of construction. A determination of the need for a supplemental approval will be made by this office pursuant to the permittee submitting written notification and revised plans indicating project changes. Failure to contact the Department prior to executing changes to the project shall constitute reason for this SAA being revoked.

18. Representatives of the Department of Natural Resources and Environmental Control shall be allowed to access the property to inspect all work during any phase of the construction and may conduct pre and post-construction inspections, collect any samples or conduct any tests that are deemed necessary.
19. The activities authorized herein shall be conducted so as not to violate the State of Delaware's Surface Water Quality Standards, as amended July 11, 2011.
20. All construction materials, waste or debris associated with this activity shall be properly disposed of and contained at all times to prevent its entry into waters or wetlands. Construction materials shall not be stockpiled in subaqueous lands or wetlands.
21. Disturbance of subaqueous lands or wetlands adjacent to the authorized structures or activities is prohibited. Disturbance of subaqueous lands or wetlands in the path of construction activity shall be minimized. Any temporarily impacted subaqueous lands or wetlands shall be returned to pre-disturbance elevations and conditions.
22. The permittee and contractor shall employ measures during construction to prevent spills of fuels, lubricants or other hazardous substances. In the event of a spill, the permittee and contractor shall make every effort to stop the leak and contain the spill, and shall immediately contact the Hazardous Spill Response Team (HAZMAT) at 1-800-662-8802 and this office at (302) 739-9943. The permittee and contractor are responsible to comply with all directives to contain and clean up the spilled material(s) as stipulated by the HAZMAT team, and to restore the site as may be required by this office.
23. The permittee shall notify the Wetlands and Subaqueous Lands Section prior to the commencement of the work authorized by this SAA.
24. The permittee shall maintain all authorized structures and activities in a good and safe condition.
25. Any actions, operations or installations which are found by the Department to be contrary to the public interest may constitute reason for the discontinuance and/or removal of said action, operation or installation. Removal and restoration shall be at the expense of the permittee and/or upland property owner within thirty (30) days of receipt of written notice of revocation and demand for removal.

26. This SAA is personal but may be transferred provided the permittee provides prior notice to the Department of the intent to transfer and the new property owner provides appropriate documentation to substantiate ownership of the adjacent upland property and/or the structures authorized herein. Failure to transfer this SAA to a new owner may result in the revocation of the SAA and the removal of all structures authorized by this SAA at the expense of the permittee.
27. Failure to comply with any of the terms or conditions of this SAA may result in enforcement action, which could include the revocation of this SAA and subsequent restoration of the site to preconstruction conditions.
28. Upon the discretion of the department, requirements could be set for the permittee to monitor the performance and proposed benefits to habitat or biota of the shorelines installed through the approved SAA project. These monitoring requirements could be enacted if: the proposed project is to mitigate or offset a previously unauthorized action that negatively impacted the shoreline, is a new living shoreline method that has not yet been previously vetted by the department as an approved technique, and/or has funding that is through a cost share program that requires documentation of success and implementation criteria.